

Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (PREVIOUSLY AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein, in the conduction period of the pixel switching elements, the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and the voltage applied to the signal lines is determined to be higher than a desired charging voltage required for the pixel electrodes so that the voltage applied to the pixel electrodes becomes a desired value.

2. (PREVIOUSLY AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel

electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein a proportion of a maximum value of the voltage applied to the pixel electrodes with respect to the voltage supplied to the signal lines becomes different depending on a polarity of the voltage applied to the pixel electrodes.

3. (PREVIOUSLY AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein the pulse width of a supplied voltage to the signal lines in the conduction period of the pixel switching elements becomes different depending on a polarity of the voltage applied to the pixel electrodes, even when displaying the same tone.

4. (PREVIOUSLY AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein an allocated time for a single scanning line is different for each polarity of the voltage applied to the pixel electrodes.

5. (PREVIOUSLY AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein, with respect to an image display device having the common electrode for applying a common potential to the pixels and having a plurality of scanning lines for driving the pixel switching elements, liquid crystal is displaced according to a potential difference between the common electrode and the pixel electrodes so as to carry out display, and an amplitude of a voltage supplied to the signal lines is equal to an amplitude of a voltage supplied to the common electrode.

6. (PREVIOUSLY AMENDED) A method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines,

wherein the voltage applied to the pixel electrodes is less than a voltage supplied to the signal lines, and

wherein a maximum value of an amplitude of the voltage applied to the pixel electrodes is in a range of not less than 80 percent and not more than 98 percent of an amplitude of a voltage supplied to the signal lines.

7. (ORIGINAL) A method for driving an image display device, said method applying a voltage between a potential of signal lines and a potential of a common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein tones are displayed by shifting phases of waveforms of the signal lines and the scanning lines, and polarities of pixels in a signal line direction are inverted alternately.

8. (ORIGINAL) A method for driving an image display device, said method applying a voltage between a potential of signal lines and a potential of a common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein tones are displayed by shifting phases of waveforms of the signal lines and the common electrode, and polarities of pixels in a signal line direction are inverted alternately.

9. (ORIGINAL) The method as set forth in claim 8, wherein the waveform of the common electrode is off-phase by a certain degree with respect to the waveform of the scanning lines.

10. (ORIGINAL) The method as set forth in claim 7, wherein a potential difference between the potential of the signal lines and the potential of the common electrode is maximum at an end of one horizontal period.

11. (ORIGINAL) The method as set forth in claim 8, wherein a potential difference between the potential of the signal lines and the potential of the common electrode is maximum at an end of one horizontal period.

12. (ORIGINAL) The method as set forth in claim 7, wherein a potential difference between the potential of the signal lines and the potential of the common electrode is minimum at an end of one horizontal period.

13. (ORIGINAL) The method as set forth in claim 8, wherein a potential difference between the potential of the signal lines and the potential of the common electrode is minimum at an end of one horizontal period.

14. (CURRENTLY AMENDED) A method for driving an image display device, said method displaying tones by modulating a pulse width of a two-value voltage supplied to signal lines,

wherein a polarity of a voltage applied to pixels is changed for each scanning line, and in voltage application to pixel electrodes with a reference voltage 0V, an amplitude of scanning lines is varied between positive application for applying a voltage to a positive side and negative application for applying a voltage to a negative side, and where the voltage being applied on the

positive side and negative side are controlled based on differences in charging characteristics for negative and positive voltages.

15. (ORIGINAL) The method as set forth in claim 14, wherein a difference in amplitude of a voltage supplied to the scanning lines is equal to an amplitude of a voltage supplied to a common electrode.

16. (PREVIOUSLY AMENDED) A method for driving an image display device, said method displaying tones by modulating a pulse width of a two-value voltage supplied to signal lines,

wherein a resistance of a transistor which switches ON or OFF signal application from the signal lines to pixels is increased with time from a beginning to an end of an application time of a single pixel, where the application time of the single pixel is 1 horizontal period.

17. (ORIGINAL) The method as set forth in claim 16 wherein the resistance of the transistor is varied by varying a gate voltage.

18. (PREVIOUSLY AMENDED) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a

data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a signal line driving section for supplying a voltage, not less than a voltage supplied to the pixel electrodes, to the signal lines so that the voltage applied to the pixel electrodes becomes a voltage taking into account change of an optimum counter voltage according to a display tone.

19. (ORIGINAL) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a signal line driving section for supplying a signal, which is created by shifting a phase of a voltage waveform whose polarity is inverted per one

horizontal period, according to tone data of the display image, with respect to a phase of a voltage waveform of the scanning lines, to the signal lines.

20. (ORIGINAL) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a signal line driving section for supplying a signal, which is created by shifting a phase of a voltage waveform whose polarity is inverted per one horizontal period, according to tone data of the display image, with respect to a phase of a voltage waveform of the common electrode, to the signal lines.

21. (PREVIOUSLY AMENDED) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a scanning line driving section for varying an amplitude of a voltage supplied to the scanning lines between positive application being application of a voltage to a positive side in voltage application to pixel electrodes with a reference voltage 0V and negative application being application of a voltage to a negative side in voltage application to pixel electrodes with a reference voltage 0V.

22. (ORIGINAL) A driving device of an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said driving device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said driving device includes a scanning line driving section for varying an amplitude of a voltage supplied to the scanning lines so that a resistance of a transistor for switching ON or OFF signal application from the signal lines to the pixels is increased with time from a beginning to an end of an application time of a single pixel.

23. (PREVIOUSLY AMENDED) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said image display device includes a signal line driving section for supplying a voltage, not less than a voltage applied to the pixel electrodes, to the signal lines so that the voltage applied to the pixel electrodes becomes a voltage taking into account change of an optimum counter voltage according to a display tone.

24. (ORIGINAL) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said image display device includes a signal line driving section for supplying a signal, which is created by shifting a phase of a voltage waveform whose polarity is inverted per one horizontal period, according to tone data of the display image, with respect to a phase of a voltage waveform of the scanning lines, to the signal lines.

25. (ORIGINAL) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said image display device includes a signal line driving section for supplying a signal, which is created by shifting a phase of a voltage waveform whose polarity is inverted per one horizontal period, according to tone data of the display image, with respect to a phase of a voltage waveform of the common electrode, to the signal lines.

26. (PREVIOUSLY AMENDED) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according

to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said image display device includes a scanning line driving section for varying an amplitude of a voltage supplied to the scanning lines between positive application being application of a voltage to a positive side in voltage application to pixel electrodes with a reference voltage 0V and negative application being application of a voltage to a negative side in voltage application to pixel electrodes with a reference voltage 0V.

27. (ORIGINAL) An image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode for applying a common potential to pixels,

said image display device applying a voltage between a potential of the signal lines and a potential of the common electrode when a potential of scanning lines is ON, and displaying tones by modulating a pulse width of a two-value voltage supplied to the signal lines,

wherein said image display device includes a scanning line driving section for varying an amplitude of a voltage supplied to the scanning lines so that a resistance of a transistor for

switching ON or OFF signal application from the signal lines to the pixels is increased with time from a beginning to an end of an application time of a single pixel.

28. (PREVIOUSLY AMENDED) An activematrix-driven image display device including an image display panel for displaying an image by switching by a plurality of active elements, comprising:

a voltage varying circuit for varying a voltage of a signal for driving the active elements according to temperature change of the image display panel, so as to carry out temperature compensation of the active elements, and

a step-up circuit for stepping up a signal voltage for driving the active elements, said signal voltage for driving the active elements being stepped up by the step-up circuit after being varied by the voltage varying circuit.

29. (ORIGINAL) The image display device as set forth in claim 28, wherein said image display panel is a liquid crystal display panel.

30. (ORIGINAL) The image display device as set forth in claim 28, comprising a temperature detector for detecting temperature change of the image display panel.

31. (ORIGINAL) The image display device as set forth in claim 28, wherein said image display panel carries out tone display by phase modulation driving.

32. (ORIGINAL) The image display device as set forth in claim 28, wherein an applied voltage of a scanning signal is varied according to temperature change of the image display panel.

33. (ORIGINAL) The image display device as set forth in claim 28, wherein an applied voltage of a common signal is varied according to temperature change of the image display panel.

34. (ORIGINAL) The image display device as set forth in claim 28, wherein an applied voltage of a tone signal is varied according to temperature change of the image display panel.

35. (CANCEL)

36. (PREVIOUSLY AMENDED) A driving device of an activematrix-driven image display device having an image display panel for displaying an image by switching by a plurality of active elements, said driving device comprising:

a voltage varying circuit for varying a voltage of a signal for driving the active elements according to temperature change of the image display panel, so as to carry out temperature compensation of the active elements, and

a step-up circuit for stepping up a signal voltage for driving the active elements,

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said signal voltage for driving the active elements being stepped up by the step-up circuit after being varied by the voltage varying circuit.

37. (PREVIOUSLY AMENDED) A driving method of an activematrix-driven image display device having an image display panel for displaying an image by switching by a plurality of active elements and carrying out step up voltage of a signal for driving the active elements so as to supply the signal to the image display panel,

wherein a voltage of a signal for driving the active elements is varied before the step up according to temperature change of the image display panel, so as to carry out temperature compensation of the active elements.